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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,886	07/18/2003	William A. Wood	SP03-083	2763
22928	7590	02/02/2005	EXAMINER	
CORNING INCORPORATED			LEPISTO, RYAN A	
SP-TI-3-1				
CORNING, NY 14831			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 02/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/622,886

Applicant(s)

WOOD, WILLIAM A.

Examiner

Ryan Lepisto

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1/05, 2/04, 10/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statement filed 10 January 2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. The document WO 01/71391 has not been provided. There is an electronic image document in the application that is not viewable to the examiner in the application. This might be that document. The office has taken measures to correct this, but the quickest way to alleviate this is if the document is re-sent by the applicant.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-10 and 12-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Jiang et al (US 2002/0012510 A1)** (Jiang).

Jiang teaches a dispersion compensating fiber (abstract) for operating in a system (or module) operating in the C or L operating band (paragraph 0003) having a total dispersion at 1550 nm of between -30 to less than -100 ps/nm/km (paragraph

0012), a total dispersion slope between 1530 to 1560 nm of  $-1.0$  to  $-2.5$  ps/nm<sup>2</sup>/km (paragraph 0011), a kappa at 1550 nm of between 40 to 100 or more (paragraph 0013), an effective area at 1550 nm of greater than  $50 \mu\text{m}^2$  (paragraph 0017); comprising a refractive index profile (Fig. 3) having a center core segment (Fig. 3 between 1 and 2  $\mu\text{m}$  radius) with an inner peak (at about radius  $r =$  about  $0.1 \mu\text{m}$ ) having a relative refractive index about 1.6%, an outer peak with a relative refractive index (at  $r =$  about  $1.0 \mu\text{m}$ ) of about 1.7% and a trough positioned between the inner and outer peak having a minimum relative refractive index less than the refractive index of the inner and outer peaks, a moat segment (between about  $r = 2 \mu\text{m}$  to  $r = 6 \mu\text{m}$ ) surrounding the center core region having a relative refractive index of about  $-0.4\%$  and a ring segment (between about  $r = 6 \mu\text{m}$  to  $r = 11 \mu\text{m}$ ) surrounding the moat segment having a positive relative refractive index (about 0.2% to 0.3%) wherein the relative refractive index of the trough and ring segments are greater than the relative refractive index of the moat segment (Fig. 3).

Jiang does not teach expressly the outer peak being between  $1.5 \mu\text{m}$  and  $2.5 \mu\text{m}$ , dispersion minima positioned at least 55 nm above the center operating wavelength, residual dispersion of the span being less than  $\pm 25$  ps/nm per 100 km over a wavelength band of between about 1527 to 1567 nm, the relative refractive index of the moat segment being less than  $-0.5\%$  in the embodiment showed in Fig. 3 and the relative refractive index of the ring segment being greater than 0.4% or between 0.5% to 1.0% in the embodiment showed in Fig. 3..

Jiang does teach that in the L-band (1565-1625 nm) the losses being less than 1 db per kilometer and the dispersion slope is made less than  $-0.08 \text{ ps/nm}^2/\text{km}$  (1530 to 1560 nm) (paragraph 0011) for compensating dispersion (paragraphs 0014 and 0017) so it is reasonable to expect residual dispersion of the span being less than  $\pm 25 \text{ ps/nm}$  per 100 km over a wavelength band of between about 1527 to 1567 nm. Jiang also teaches a near zero residual dispersion near 1605 nm (Fig. 6), which is 55 nm above the center operating wavelength. Jiang also teaches, in examples 2-4 and 6 in Table 1 that the moat segment relative refractive index is less than  $-0.5\%$  (labeled at  $\Delta 2$  in the table) and the ring segment (labeled as  $\Delta 3$  in Table 1) being 0.88 in example 3.

The different examples are analogous art because they are from the same field of endeavor, segmented core dispersion compensating fibers with very similar relative index profiles.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to optimize the system parameters in the different example as taught by Jiang and having peaks in a slightly different radius, like the outer peak being between  $1.5 \mu\text{m}$  and  $2.5 \mu\text{m}$  to produce an optimized dispersion compensating fiber therefore, it would have been obvious to one of ordinary skill in this art to modify example 5, shown in Fig. 3 to obtain the invention as specified in the applicant's claims.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

The motivation for doing so would have been to improve efficiency and the level of dispersion compensation by having a fiber with the ability to compensate for dispersion of non-zero dispersion shifted-fibers and other positive dispersion optical fibers over a wide wavelength band around 1550 nm (paragraph 0008).

3. **Claims 1 and 5-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Li et al (US 6,031,956)** (Li).

Li teaches a high performance, segmented core, dispersion compensating optical fiber with a relative refractive index profile shown in Fig. 2 with a effective area greater than  $60 \mu\text{m}^2$  (abstract) comprising a center core segment (Fig. 2 between 1 and 2  $\mu\text{m}$  radius) with an inner peak (16, at about radius  $r =$  about 0.1  $\mu\text{m}$ ) having a relative refractive index about 0.75%, an outer peak with a relative refractive index (18, at  $r =$  about 1.0  $\mu\text{m}$ ) of about 1.0% and a trough positioned between the inner and outer peak having a minimum relative refractive index less then the refractive index of the inner and outer peaks (about 0.6%), a moat segment (20, between about  $r = 2 \mu\text{m}$  to  $r = 6 \mu\text{m}$ ) surrounding the center core region having a relative refractive index of about 0.1% and a ring segment (22, between about  $r = 5 \mu\text{m}$  to  $r = 7 \mu\text{m}$ ) surrounding the moat segment having a positive relative refractive index (about 0.3%) wherein the relative refractive index of the trough and ring segments are greater than the relative refractive index of the moat segment (Fig. 2).

Li does not teach expressly the outer peak being between 1.5  $\mu\text{m}$  and 2.5  $\mu\text{m}$ .

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to optimize the system parameters by having peaks in a slightly different radius, like the outer peak being between 1.5  $\mu\text{m}$  and 2.5  $\mu\text{m}$  to produce an optimized dispersion compensating fiber therefore, it would have been obvious to one of ordinary skill in this art to modify Li, shown in Fig. 2 to obtain the invention as specified in the applicant's claims.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

The motivation for doing so would have been to improve the fibers operating characteristics by providing for a fiber with high performance in a band around 1550 nm, having a large effective area and reducing non-linear effects (column 1 lines 10-20).

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Jiang et al (US 2003/0021563 A1) and (US 2003/0147612 A1) are both related to the Jiang reference used in this action.
- Dong et al (US 6,640,031 B2) teaches a similar refractive index profile as applicant's (Fig. 11).



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- Bickham et al (US 6,789,960 B2) teaches a similar refractive index profile as applicant's (Fig. 23).
- Vobian (US 2002/0015569 A1) teaches a similar refractive index profile as applicant's (Fig. 4).
- Bickham et al (US 2003/0063875 A1) teaches a similar refractive index profile as applicant's (Fig. 23).
- Gaarde et al (US 2003/0210876 A1) teaches a similar refractive index profile as applicant's (Fig. 1).
- Gaarde et al (US 2004/0052486 A1) teaches a similar refractive index profile as applicant's (Fig. 2).
- Berkey (US 6,317,552 B1) teaches a similar refractive index profile as applicant's (Fig. 5).
- Li et al (US 6,343,176 B1) teaches a similar refractive index profile as applicant's (Fig. 3).
- Shoal et al (US 6,360,045 B1) teaches a similar refractive index profile as applicant's (Fig. 5).
- Bickham et al (US 6,801,699 B1) teaches a similar refractive index profile as applicant's (Fig. 5-6).
- Dong et al (US 6,640,031 B2) teaches a similar refractive index profile as applicant's (Fig. 11).
- Li et al (US 2002/0154877 A1) teaches a similar refractive index profile as applicant's (Fig. 7).



**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Lepisto whose telephone number is (571) 272-1946. The examiner can normally be reached on M-F 7:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ryan Lepisto

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Date: 1/27/05



Frank Font

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